

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2016/2017

EBT 4076 – MEDICAL SYSTEMS & DEVICES
(BE)

3 MARCH 2017
3.00 p.m – 5.00 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question Paper consists of three pages including the cover page.
2. Attempt **ALL FOUR** questions. Each question carries 25 marks and the distribution of the marks for each question is given.
3. Write all your answers in the Answer Booklet provided.

QUESTION 1

- a) What is a Doppler ultrasound? Explain its working principles. [5 marks]
- b) Provide three applications of Doppler flowmeters. [3 marks]
- c) How can Doppler flowmeters be used to study a fetus with intrauterine growth restriction? [5 marks]
- d) What is meant by Doppler echocardiography? [5 marks]
- e) Explain the principles of 2D Vector Doppler Imaging. [7 marks]

QUESTION 2

- a) What is meant by hemodialysis? [4 marks]
- b) Explain the principles of a dialysis machine. [8 marks]
- c) Sketch a diagram showing the flow of fluids through a dialysis machine. [5 marks]
- d) What do you understand by peritoneal dialysis? [8 marks]

Continued ...

QUESTION 3

- a) What is a Gamma knife? [5 marks]
- b) Describe two applications and three benefits of a Gamma knife. [4+6 marks]
- c) What is a Gamma sterilizer? Explain how it is used in a hospital. [5+5 marks]

QUESTION 4

- a) Discuss five applications of X-rays in the hospital. [5 marks]
- b) How can X-rays be used to image soft tissues such as the heart? [5 marks]
- c) Discuss how X-rays can be used for mammography. [5 marks]
- d) Define electric shock. What is meant by a microshock and macroshock? [5 marks]
- e) Explain the IEC 60601-1 safety identification codes for medical equipment of types B, BF and CF. [5 marks]

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